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ABSTRACT

In order to understand the spelling process and to use effective teaching methods, teachers should become familiar with valid research findings in the field of spelling--one of the most thoroughly researched areas of the school curriculum. This book explores (with references to research) five points which teachers should consider in developing an effective spelling program: problems faced by the student, problems faced by the teacher, successful methods and approaches for teaching spelling, causes of spelling deficiency, and future needs and developments in spelling instruction. (JM)

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SPELLING

The Application of Research Findings

By Ruel A. Allred

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INTRODUCTION

Accurate spelling is important at all levels of written composition. A writer's creativity and effectiveness are influenced greatly by spelling ability. Good spellers are able to express their thoughts on paper freely while poor spellers are hampered in their ability to communicate in writing.

Mastery of English spelling presents challenges for both the teacher and student. In an attempt to achieve success, a variety of methods and approaches are often used in the classroom. In some instances these attempts are valid and result in success. But far too many do not have a sound basis and sometimes do more damage than good.

To achieve the best results, it is critical for the teacher to understand the spelling process and use effective, proven teaching methods. To do this, teachers should identify valid research findings in the field of spelling.

An investigation of spelling literature reveals that spelling is one of the most thoroughly researched areas of the curriculum, and interest in how best to teach spelling persists. Most of the recent research substantiates earlier findings, and even though some conflicts arise, there is much agreement from which the classroom practitioner can gain helpful direction.

In observing spelling practices in classrooms, one often wonders why a particular method is used when other methods have proven more successful. Ernest Horn's observation in 1960 is still true today:

> While the existing evidence will be refined, enlarged, and in some instances, corrected by new research, the chief problem today appears to be a more critical and universal application of the evidence now available. (38:1350)

One of the tasks faced by the spelling teacher and the authors of spelling programs is to apply the evidence now available. By bringing together pertinent research findings, the author of this report hopes to assist in this task.

In order to understand how to set up an effective spelling program, it is helpful to approach the task in a systematic way. First, it is important for the teacher to understand the major problems faced by the student. Second, it is necessary to understand the critical problems faced by the teacher. Third, it is important to implement methods that have been proven successful. Fourth, it is useful for the teacher to understand the causes of, and how to overcome, spelling deficiency. And fifth, the teacher should recognize future needs and developments in spelling instruction.

PROBLEMS FACED BY THE SPELLER

To teach spelling, teachers should understand the task faced by the speller. Many adults have forgotten the frustration they experienced as they learned to spell. Their familiarity with the shapes and letter sequences of certain words has made it possible for them to spell accurately. In this way some adults lose their empathy with the learner, thereby becoming insensitive to the problems facing those who have not yet learned to spell.

The inconsistencies faced by spellers of English are many. They must learn to use 26 letters to represent some 44 different sounds found in the language. Not only is one written symbol frequently required to represent more than one sound, but a complicated system has evolved in which two symbols are sometimes written to represent one sound in one context and a different sound in another, resulting in the existence of at least 2,000 different visual patterns which represent the 44 sounds.

While no attempt will be made in this report to treat comprehensively the problems faced by the speller, four major areas will be discussed to help re-acquaint the reader with these problems: spelling the schwa sound, spelling the "r controlled" vowel, spelling other multiples of single sounds, and additional problems.

Spelling the Schwa Sound

A major source of confusion results from the schwa sound—/ə/. It occurs frequently in English and in a variety of ways. Though its use may vary from one part of the country to another, it is the sound often assigned to the vowels (a,e,i,o,u) in the unaccented syllable of a multi-syllable word (e.g., distant, problem, robin, bottom,

product), and it is sometimes represented by combinations of these vowels (e.g., certain, ocean, question). Confusion is compounded when some people use the sound in commonly used words that have only one syllable (e.g., the, of, from). The sound is also found more than once in some words. When this is the case, there are sometimes two different spellings for the same sound (elephant, capitol) while in other words the same symbol is used both times the sound occurs (banana, excellent). Further complication results from the fact the schwa sound is usually the same as that of the short /u/—the difference being whether or not the syllable in which it occurs is stressed.

The schwa sound "is found in half of the multi-syllabic words in the 10,000 commonest words. It is spelled thirty ways with almost any vowel or vowel digraph." (2:363) In order to empathize with their students and to plan effective learning strategies, teachers should be familiar with the schwa sound and its function, a common but poorly understood element of the English language.

Spelling the "r Controlled" Vowel

During an actual spelling contest a child was asked to spell the word "bird"; he responded "b-u-r-d." The boy was told that he was wrong and was eliminated from the contest, whereupon he retorted: "If b-u-r-d doesn't spell bird, then what does it spell?" This illustrates another frustration faced by the speller and pinpoints one of the most frequent causes of spelling errors—the "r controlled" vowel.

In the words "her," "fir," and "burn" we find common examples of /er/ being spelled three different ways. In the words "dollar" and "doctor" we find the same sound spelled with "ar" and "or." The sound of /er/ is spelled with "er," "ir," or "ur" in a variety of circumstances and is spelled with "or" or "ar" in the unaccented syllable in several multi-syllable words, and by "or" when preceded by a "w" as in the word "work."

It is much easier for students to say /er/ when "er," "ir," or "ur" is seen in print than it is for them to spell correctly when told that the sound of /er/ can be spelled with "er," "ir," "ur," "or," or "ar." This is one reason why the skill of effective spelling usually lags behind effective reading, for the speller is required to remember how many words look before being able to spell them correctly.

Spelling Other Multiples of Single Sounds

In addition to the schwa and the "r controlled" vowels, there are sounds that have more than one spelling. They also contribute to poor spelling and frustration. Boyer (4) gives examples of 15 different ways in which the long /a/ sound can be written. Horn (38:1338) states that "the long /e/ sound is spelled fourteen ways in common words and only about one-fifth of the time with /e/ alone." There are at least 10 ways to spell the long /i/ sound. This, combined with the ways to spell the long /a/ and long /e/ cited above, make at least 39 common ways to spell these three sounds.

"In our writing of the language the letter 'a' has forty-seven different sound associates. There are 300 different combinations which express the seventeen vowel sounds." (2:363) When all possibilities are applied to words in the English language, thousands of spelling variations evolve for certain words, each being phonically correct. An example is the word *circumference.* When it was analyzed by syllables to determine the possibilities for spelling the word sound, 288 possible combinations were discovered. When each letter was analyzed, 396,900,000 possible combinations were found. (2:363)

To say that multiple spellings of single sounds cause spelling problems for the student is an understatement. It is no mystery that children continue to spell many words inaccurately in their writing, even if they have been able to pass them successfully on a spelling test.

Additional Problems

A multiplicity of other problems faces the speller. Those connected with the letter "c" are examples. The letter "c" has no sound of its own and nearly always has the /s/ sound when followed by the letters "i," "e," or "y." It usually takes the sound of /k/ when followed by other letters except when it is combined with "h" to represent the digraph sound of /ch/.

Other complications are caused by the letters "x" and "q", which have no sounds of their own and appear to serve no unique purpose. The many silent letters, along with foreign spellings and other inconsistencies, are further sources of confusion.

English spelling is difficult, and the punishment for poor spelling

is harsh. Although mastery must remain the goal, teachers should be aware of the problems that face the student, and not brand students "dull" or "lazy" when they might be victims of a system that appears to be inconsistent to the point of being impossible or, at best, difficult for some to master.

Attempted Reform

The problems faced by the speller have not gone unnoticed, and through the years several serious and scholarly attempts have been made to reform the spelling of the English language by making it more regular and consistent in its symbol-sound relationships. Attempts to bring order out of orthographic confusion have been underway since the middle of the fourteenth century. Each century since then has seen serious attempts to overcome the problems. Among others, Benjamin Franklin suggested extensive changes in American spelling in 1768, and Noah Webster introduced many new spellings. Webster's book, the *Elementary Spelling Book*, published in 1783 has had considerable influence on English spelling.

In more recent years continued attempts have been made by individuals and by organized societies. "Highly competent scholars like Dr. Godfrey Dewey of Harvard (now Emeritus), and Dr. Ralph Owen of Temple, and . . . George Bernard Shaw, the late Colonel R. R. McCormick of the *Chicago Tribune*, and Thorstein Veblen have contributed their attention for long years. . . ." (48:435)

Since the latter part of the eighteenth century several societies both in Britain and the United States have developed and recommended the adoption of rules which would greatly simplify English spelling. It would be gratifying to be able to report that giant strides have resulted from these previous efforts and that both financial and human resources have been conserved, but the words of Ernest Horn writing many years ago still ring true:

> Although the changes recommended by these various organizations were scholarly and, in the main, conservative, neither the general rules suggested for simplifying our spelling nor the lists of words recommended for simplification have had much influence, unfortunately, on present-day spelling. (37)

The quest to reform spelling, though discouraging at times, is not hopeless. There are those who believe that through technological and intellectual advances, some of the major obstacles can be overcome and thus make meaningful progress possible. (48)

In spite of the continued efforts made to simplify the spelling of English, past experience dictates that teachers in the classrooms today must not wait for widespread changes before they teach children how to spell, for the odds are great that students in school now will leave the classroom before hoped-for changes have been realized.

PROBLEMS FACED BY THE TEACHER

While the problems that face the spelling teacher sometimes seem legion, there are a few that persist in being very troublesome. Of these, the three most critical are: (1) how to recognize and meet individual needs by providing instruction geared to accommodate the wide range of ability within a classroom, (2) how to select the appropriate spelling vocabulary that will benefit students the most, and (3) how to use methods, procedures, and activities based on valid research findings that will enable students to use their time most productively. Fortunately, information is available in all three of these areas, which should help teachers understand the problems that spellers face and, in turn, show these teachers how they can take meaningful and effective action.

Individual Differences in Spelling

It has been in our schools more than in any other place that individual differences in spelling have come to our attention. (71) Research and experience have shown the range of spelling ability and achievement to be great among students in all grades. (42) Observant teachers and others who have access to written work or spelling tests of schoolchildren are very much aware of the differences among individuals.

Not unfamiliar to the classroom teacher is the frustrating experience of a fifth-grade teacher who, during the first week of school, gave a test to his students on all the words found in their spelling text for that year. Fourteen students in his class of twenty-nine spelled all the words correctly, and there were others who knew how to spell very few of the words. His comment was, "I know what to do in spelling the first week of school [give a test on the words for the year], but what do I do to meet the needs of the children for the remaining weeks of the year?" This is a dilemma that is faced by practically every teacher, and it is one that must be resolved if teachers are to carry out their responsibilities.

Differences in spelling ability have been discovered in research since the early part of this century. In 1913, Buckingham (6) conducted a study of children in grades three through eight entitled *Spelling Ability, Its Measurement and Distributions,* in which he reported that pupils of every grade between the third and eighth grades perform like typical children of every other grade within that range. In 1927, George D. Strayer (68) conducted an extensive survey of the schools of Duval County, Florida, including the city of Jacksonville. In the sixth grade he reported a range in spelling ability equal to 10 school grades. There was a range of two and one-half years between the lowest and the highest scores of those pupils in the middle 50 percent. This range increased to almost three years in the eighth grade. There is, in effect, a spread of academic achievement as children progress from grade to grade. If we are to succeed, these differences among students must be recognized and met.

Spelling Vocabulary

The choice of words to be taught is another critical task faced by the teacher of spelling. Agreement is strong that the words to be included in a spelling program should, in large, be based upon those that children habitually use in their writing. Horn (39:7) has stated that "the frequency with which words are written by children in a given grade is now generally regarded as the primary principle for the selection of words for that grade." He (38:1344) also reported, "It seems desirable that the words to be taught in any grade should be chosen from among those words that appear in the writing done by children in that grade and from words used [frequently] in adult writing, thus insuring both present and future value."

Several studies have been conducted for the purpose of discovering which words should be included in spelling programs. Among those that investigate child or adult writing vocabularies are studies by Thorndike and Lorge (69), Fitzgerald (23), Dolch (15), Horn (37), and Rinsland (63). Detailed examination has been made of the words identified by these studies. They have been analyzed according to usage by children in specific grades, by children in general, and by adults. The results of this research should serve as a guide for people who prepare basic lists of words for use in regular spell-

ing programs and thus help solve one of the two important problems involved in the teaching of spelling: spelling vocabulary.

There is general agreement that the studies by Rinsland (63) and Horn (37) still serve as the best sources of words used by children and adults in their writing. A careful investigation of these studies reveals information that should be understood and used by all teachers of spelling. This investigation reveals which words are used most frequently and have the greatest utility. It also reveals certain words that are used frequently by both children and adults, and other words that are used frequently by either children or adults.

The information gained from these studies is of utmost importance to the teacher of spelling. As seen in Table 1, 1,000 words account for 89 percent of all words that children use in their writing (89 percent usage for 1,000 words), 2,000 words account for 95 percent (a 6 percent usage gain for the second 1,000 words), and 3,000 words account for 97 percent (only a 2 percent gain for the third 1,000 words). The important implication for the teacher is that each of the first 1,000 words is used more than forty-four times as often as those found in the third 1,000 words. A student to get the same usage would need to learn approximately forty-four of the third 1,000 words for each word learned in the first 1,000 words—a fact that is not taken into consideration when standardized tests are used to measure growth.

Table 1
Frequency of Word Usage: Children (63)

Number of Words	Percent Usage	Percent Gain in Use Per 1000 Words
10	25%	—%
100	60	—
1,000	89	89
2,000	95	6
3,000	97	2

Table 2 shows similar results for adult usage. In comparing the 3,000 words used most frequently by children with the 3,000 words used most frequently by adults, the author found an overlap (words used by both children and adults) of approximately 2,000

words. This means that with 4,000 words—those used frequently only by children (about 1,000), only by adults (about 1,000), and by children and adults together (about 2,000), it is possible to identify 97 percent of all words used frequently by children and adults in their writing.

Table 2
Frequency of Word Usage: Adult (37)

Number of Words	Percent Usage	Percent Gain in Use Per 1000 Words
100	58.8%	—%
1,000	89.6	89.6
2,000	95.4	5.8
3,000	97.7	2.3

Methods of Teaching

How to teach spelling, like learning how to spell, is not simple or obvious. The complexities are deep-rooted because of the difficulties inherent in the English language. For this reason, teachers should analyze the different methods of teaching spelling and examine the research findings about them.

Some of the most comprehensive research in teaching methods has been done in the area of spelling. It has attracted the efforts of educational researchers in the early part of this century and has persisted through the middle decades. Although there was a period of limited activity, there remains today considerable interest in discovering the best methods for teaching spelling. There have been many important findings, but the problem cited earlier persists: in far too many instances classroom teachers are not applying much of what have proven effective through the years.

Fitzgerald (24:3) cited one reason for little change in techniques of teaching spelling from the early days of this century until the 1950's:

> Although many spelling investigations have been carried out during the past half century, improvement in teaching of spelling has been slow. One of the chief difficulties seems to have been that the results of research and experimentations were not readily available to the teacher.

We can no longer hide behind a statement of this nature. Through books, pamphlets, articles, and other means of communication, much of the information is now available to those who should apply it. It is encouraging to note that in a few classrooms we are now seeing refreshing, practical, and, in some cases, innovative application of valid research findings.

ANALYSIS OF METHODS AND APPROACHES

Some teaching methods on which valid research information exists are: (1) spelling readiness, (2) an incidental method (without formal instruction), (3) the study of words in context as opposed to lists, (4) learning unknown words, (5) the test-study-test versus the study-test method, (6) phonic instruction, (7) spelling rules, (8) linguistic generalizations, (9) individualized spelling instruction, and (10) the amount of time that can be best used each week in spelling instruction. Answers to questions raised through the application of these methods are of value to the teacher. In the discussion that follows, they will be used to help establish effective methods for classroom use.

Spelling Readiness

There are two kinds of spelling readiness. A student needs to be intellectually able and emotionally willing to learn. Both factors must be reckoned with as spelling instruction is planned.

Emotional readiness is an individual matter. It is necessary before learning can take place at any stage of development, and teachers need to be alert to the forces operating in a student's life that either permit or prevent learning. Intellectual readiness is necessary before formal spelling study can begin. There are basic

readiness criteria that are important guides to the teacher of spelling. A concise, but rather comprehensive list of these criterias has been compiled by Read, Allred, and Baird. (60:14) They recommend that the student should:

1. Have the ability to write and name all the letters of the alphabet correctly.
2. Be able to copy words correctly.
3. Be able to write his or her own name without copying.
4. Be reading at about a second-grade reading level or better.
5. Be able to enunciate words clearly.
6. See that words are composed of different letters.
7. Have a beginning phonetic sense and recognize the common letter-sound combinations.
8. Be able to write a few simple words from memory.
9. Ask for words he or she is in doubt about and be able to express a few thoughts in writing.
10. Demonstrate a desire and interest in learning to spell.

Teachers should make certain that students meet these readiness criteria before they are required to participate in formal spelling study. By so doing students avoid the frustrations, negative attitudes, and lack of progress that accompany practices of this nature and that often inhibit progress at a later time when the student might otherwise have been ready.

The above caution has particular significance when students begin formal spelling study in the early grades as a class. Even though most may be ready, there are some, often many, who are not yet prepared for the experience, and considerable damage can result. It is not uncommon to find some students that have been forced into formal spelling study who don't even know all the letters of the alphabet. How much better it would be for them to be placed into activities that would help develop spelling readiness. An excellent discussion on how this might be accomplished is found in Gertrude Hildreth's book, *Teaching Spelling*. (36)

Incidental Approach

Support has been voiced for a purely incidental approach to spelling since the latter part of the nineteenth century. Advocates of this position have not been without opponents, however (73). The evidence of the past several years supports the position that even

though spelling performance improves as a result of incidental learning, more than an incidental method is desirable. Fitzgerald (24:40) refers to Sister Gervase Blanchard:

> Her findings coupled with the findings of Gates and others indicate that teaching the individual child a method by which he can learn to spell a word in a systematic manner is highly important. It seems pedagogically unsound to abandon the child to a trial and error procedure for learning to spell a word.

Hanna and Moore (32:335) report:

> The subject-matter teachers have a serious responsibility in the business of checking spelling. However, spelling also needs to be taught separately in definite work sessions. We must not allow spelling to "go by the board" in the sense of being casual or incidental; for proficiency in spelling is basic to success in all subjects where ideas must be expressed through writing.

Spelling has been found to have a high correlation with some phases of a child's ability in other subjects. Among these are positive correlations between spelling and vocabulary (61:19) and between spelling and reading. (54:225) Even though these positive correlations exist, a review of the research reveals that many words remain unlearned and that incidental spelling cannot be justified solely by the nature of its relationship to other subjects. (57) The need exists for the direct study of words in both formal and functional ways.

Context versus Word Lists

Several individuals have investigated ways in which words should be taught for maximum efficiency and effectiveness. Howley and Gallup (43) compared the list method with the sentence, or context, method and concluded that pupils who use the list method did better than those who used the sentence method. Winch (75) in summarizing eight experiments used the term "direct" for the study of words in a list and the term "indirect" for the study of words in context; he concluded that the "direct" method of teaching spelling had proved superior to the "indirect" method. He also indicated that use of the "direct" method resulted in superior transfer value when children write dictation, in greater usage in original compositions with less time consumed, and in better de-

layed recall than did the "indirect" method. Possibly the most influential early study that attempts to answer this question was performed by McKee (51) in which he concludes that the columnar (or word list method) is superior to the context method.

The results of these early findings have been confirmed through the years. In studies that have been conducted for the purpose of discovering which method—word list or context approach—is more efficient, the bulk of the evidence favors the list method. However, a few studies (29) have offered the conclusion that learning spelling in context is at least as effective as learning by lists. Perhaps the reason for these differences lies in the nature of the study being conducted or in the way context is being used.

Wallace (72) asked a question that deserves investigation: "How can context be used to supplement a list approach?" The results of a study she conducted indicate that students achieved higher scores in spelling when using a context plus a list approach. She states, however, that on the basis of her preliminary and limited study, context is an aid to the spelling program and further investigation should be made in this area.

Of all the research findings that are consistent, the one most difficult for teachers or authors to accept in practice is that the list method is more efficient than is the context method. Perhaps it is possible to attribute this lack of acceptance to a misunderstanding of what is meant by the list method. To many, the use of a list means more than giving a list of words. Frequently, the word is used in oral context (say the word, use it in a sentence, say the word again) but the student is required to write only the word—not the sentence. This approach saves time and has proven more efficient than the approach in which a child is required to write the entire sentence. The reasons for this greater efficiency are clear. A child writing the entire sentence often knows how to spell several of the words, but perhaps a few of the words are too difficult. In many instances the only appropriate word in the sentence for the student to spell is the one taken from the list for which the sentence was originally constructed. Thus, for maximum efficiency, the list method should be supported by an oral context method, with the student writing only the word, not the entire sentence. This should make it acceptable for teachers to use the list method in this way, which is supported by findings of carefully constructed research studies.

Learning Unknown Words

Inasmuch as our task is to spell words according to a standard form, and the words with which we are concerned are those we use but do not know how to spell, one of our prime concerns is to identify how children learn to spell words they don't already know. This concern should be pursued with vigor on the part of authors and publishers.

Considerable research has been done to determine the best methods for learning how to spell a word. Two of the most important findings deal with (1) the value of the self-corrected test, and (2) the discovery of steps to use in learning a word.

Self-Corrected Test

Relatively recent research data reveal that teachers of the past have not fully utilized the best single method—the self-corrected test. Thomas Horn (41:285) found the self-corrected test in the sixth grade to contribute "from 90 percent to 95 percent of the achievement resulting from combined effort of the pronunciation exercise, corrected test and study." He further writes, "The corrected test appears to be the most important single factor contributing to achievement in spelling." The use of self-check tests for reinforcement of spelling lessons was found valuable and it "results in the learning of a significantly greater number of words than usual techniques for teaching spelling." (19:376)

Ernest Horn (39:17–18) has summarized:

> When corrected by the pupils and the results are properly utilized, the test is the most fruitful single learning activity (per unit of time) that has yet been devised. It helps pupils at all levels of spelling ability. . . . As a learning activity, to have each pupil correct his own paper is better than to have pupils exchange papers or to have the teacher correct them. However, the teacher will need to recheck papers occasionally to discover pupils who have difficulty in correcting their own work.

The self-corrected test technique works well when conditions exist that permit students to be tested on a word and to correct it immediately afterwards. In such cases, the teacher or spelling partner says the word, uses it in a sentence, and says the word again while the student writes the word. The person who gave the test then spells the word, emphasizing each letter as the student points

with a writing instrument to each letter as it is pronounced. Checking each word immediately after it is written provides immediate feedback and reinforcement of correct spelling, as well as the opportunity for immediate correction of spelling errors. This activity can be carried out effectively by a teacher working with a group of students or by spelling partners working together.

Even though the self-corrected test is effective as a learning technique, it should not be used exclusively. Once errors have been identified, provision should be made for systematic study of the unknown words according to proven study steps.

Effective Study Steps

Considerable research has been done to determine the best methods for learning how to spell a word. In addition to the technique of the self-corrected test, the following steps are well-established and recommended (39:19):

1. Pronounce each word carefully.
2. Look carefully at each part of the word as it is pronounced.
3. Say the letters in sequence.
4. Attempt to recall how the word looks and spell the word to oneself.
5. Check this attempt to recall.
6. Write the word.
7. Check this spelling attempt.
8. Repeat the above steps if necessary.

The above, or similar, steps are found in most modern spelling books.

Experience and research have proven the study steps to be valid and helpful when properly applied. However, students often have difficulty in applying the steps to the study of words. Part of the problem is that some students memorize the steps, but few learn to apply them properly. Some teachers who have experienced difficulty in getting students to apply the study steps have attempted to modify them to make them more functional. One such attempt is reported by Gilstrap (28:483), whose recommended steps are:

1. Look at the word and say it softly. If it has more than one part, say it again, part by part, looking at each part as you say it.

2. Look at the letters and say each one. If the word has more than one part, say the letters part by part.
3. Write the word without looking at the book.

Some may feel there is psychological advantage to having three rather than eight study steps, but the three steps include nearly all the elements of the eight study steps, and it is questionable that this organization simplifies the process. The eight study steps apply visual, auditory, kinesthetic/tactile senses in a productive way. To eliminate any of the steps might restrict the effectiveness of the approach. Perhaps simplified study procedures could be more functional, but there is need for evidence based on considerable research before we are justified in replacing any of these proven study steps.

Test-Study-Test versus Study-Test

Research findings comparing the test-study-test method with the study-test method strongly favor the test-study-test method. Gates (27) found this true for all grades above early third. Fitzgerald (22) and Thomas Horn (40) support the idea that a pretest method may even be better for the early grades.

Rieth (62) conducted a study to see if daily testing and correction of five or six words was better than a study-test approach in weekly review tests. The students who were tested daily did significantly better on their review tests than when they were tested once a week without daily testing. In his critique of research on English, Sherwin (66) concluded that spelling need not rely upon rules, nor emphasize the "hard spots," nor dwell upon syllabification, but should rather adopt the test-study-test approach.

Based on research findings, the author recommends a test-study-test approach for the intermediate grades and beyond, and for the primary grades he recommends a preview test-study-test approach, a method which permits the student to look over the words before taking the test. One would expect this practice to be used extensively by authors and spelling instructors, but it seems to be ignored much too often.

Phonic Instruction

As people spell they depend heavily upon their ability to use phonics. They usually determine individual sounds and then

associate the appropriate symbol for these sounds, or they hear the pronunciation of a word as a whole and write the word according to the sounds they have heard. Just how accurate is this method? To what degree should this approach be trusted? Even though there are some conflicting reports, the evidence can be summarized in the following statement:

> A child's knowledge of phonetic principles plays an important role in his being able to spell, but instruction in phonics is an aid to spelling and not a substitute for the systematic study of words in the spelling list. (39)

A basic cause of problems faced by some spellers is that they have not developed the ability to associate sounds with the appropriate symbols. They might not be able to distinguish a short /e/ sound from a short /i/ sound, or they may hear the sound of /r/ as being the same as /l/ or /m/. Their inability to associate sounds and symbols effectively often renders them helpless as far as spelling is concerned, and they are ranked among the handicapped in spelling.

Even though phonics is useful, it has its limitations. A person might spell correctly four out of five sounds, but by inaccurately representing one out of five sounds, or by failing to write silent letters, this same person may misspell at least one letter in the majority of words in the English language. Unfortunately for them, credit is not given when four-fifths of a word is spelled accurately. Students should use phonics as an aid only, because complete dependence upon phonics will result in considerable frustration and confusion.

Spelling Rules

Over forty years ago studies were conducted for the purpose of answering the question, To what extent should rules be taught in order to help children learn how to spell? Several of these studies have been reported by Foran (25), Sartorius (65), and King. (46) Foran's pertinent summary may be paraphrased as follows:

1. Only a few rules should be taught. Those taught should have no or few exceptions.
2. Some rules should be taught, for children will generalize what they have learned and such generalizing should be directed as far as the spelling of English words permits.

3. Only one rule should be taught at a time.
4. A rule should be taught only when there is need of it.
5. The teaching of the rules should be integrated with the arrangements or grouping of the words in the textbook.
6. Rules should be taught inductively rather than deductively.
7. There should be ample reviews of the rules both in the grades in which they have been learned and in the following grades.
8. Tests of knowledge of the rule should insist not so much upon logical precision as on comprehension and ability to use the rule.

More recent information concerning the use of rules continues to support the earlier conclusions. These findings can be summarized by saying that knowing a given rule may furnish a child with a clue to how a word is spelled, but because of the complexity of the language and the many exceptions to most rules, a compromise must be made between learning enough rules to give a system for spelling and learning so many rules that they become a burden. Rules cannot be considered a central approach to the spelling problem, but if they are approached reasonably and derived inductively, they are helpful to many learners. (3)

The rules that can be applied according to these guidelines are listed below. Most of them have a few exceptions, but the rules are sufficiently universal to be of value to the speller. (60:46–48)

1. Some rules governing the addition of suffixes and inflected endings are:
   a. Words ending in silent *e* drop the *e* when adding a suffix or ending beginning with a vowel and keep the *e* when adding a suffix or ending beginning with a consonant.

bake	manage
baking	managing
baker	management

   b. When a root word ends in *y* preceded by a consonant, the *y* is changed to *i* in adding suffixes and endings unless the ending or suffix begins with *i*.

fly	study
flies	studying
flying	studious
	studies

   c. When a root word ends in *y* preceded by a vowel, the root word is not changed when adding suffixes or endings.

play	monkey
playful	monkeys

d. When a one-syllable word ends in a consonant with one vowel before it, the consonant is doubled before adding a suffix or ending beginning with a vowel.

run	ship
running	shipping
	shipment

e. In words of more than one syllable, the final consonant is doubled before adding a suffix or ending if: (1) the last syllable is accented, (2) the last syllable ends in a consonant with one vowel before it, and (3) the suffix or ending begins with a vowel.

begin	admit
beginning	admittance

2. The letter *q* is always followed by *u* in common English words.

queen	quiet

3. No English words end in *v*.

love	glove

4. Proper nouns and most adjectives formed from proper nouns should begin with capital letters.

America	American

5. Most abbreviations end with a period.

etc.	Nov.

6. The apostrophe is used to show the omission of letters in contractions.

don't	haven't

7. The apostrophe is used to indicate the possessive form of nouns but not pronouns.

boy's	its
dog's	theirs

8. When adding *s* to words to form plurals or to change the tense of verbs, *es* must be added to words ending with the hissing sounds (x,s,sh,ch).

glass	watch
glasses	watches

9. When *s* is added to words ending in a single *f*, the *f* is changed to *v* and *es* is added.

half	shelf
halves	shelves

10. When *ei* or *ie* are to be used, *i* usually comes before *e* except after *c* or when sounded like *a*. (Note these exceptions: leisure, neither, seize, and weird.)

believe	neighbor
relieve	weigh

Linguistic Generalizations

Attention paid to linguistic generalizations ranks as one of two things that have made the greatest impact on spelling programs and practices during the past decade. (The other is individualized instruction, which will be discussed in the next section.) Advocacy of the use of phonic patterns spans many years (32:56), but the greatest impact of linguistic generalizations has been felt only recently. Much of this influence is the result of work done by Paul R. Hanna and others, who feel that access to the following developments has made new breakthroughs possible in spelling research (31):

1. The content and techniques of descriptive linguistics
2. The benefits of computer-based data processing
3. The modern views of "structured learning"

Hanna and others concluded that "the spelling of phonemes of the American-English language is much more highly consistent than heretofore believed by spelling researchers," and that "much of the spelling of American-English can be taught by developing the pupil's understanding of the structural principles underlying the orthography." (31:57)

The results of this and related research on the structure of the language have caused several authors and publishers to assume that if the findings are applied to spelling programs and instruction, students will learn to spell better than they have from previously used programs. Though this possibility exists, a thorough review of the literature reveals a need for extensive research on the subject as it relates to student growth in spelling ability. Although access to modern technology has allowed us to learn more about the language, educators have done what they are often accused of doing: adopting practices before their effectiveness has been established through adequate testing.

As helpful as recent findings are in describing the language accurately, the question of how useful specific generalizations are in teaching spelling remains unanswered. Some elements of the language, such as the majority of consonant sounds, are spelled with nearly 100 percent regularity, but learning these sounds as spelling generalizations is neither necessary nor helpful since regularly spelled consonants seldom cause spelling difficulties. Some pat-

terns may occur with a high degree of regularity but apply to only a few words or to words that are not frequently used in writing.

Another problem in identifying valid generalizations for spelling study is that phonic and structural analysis principles which are useful in learning to read may not always be helpful for spelling. It is true that the word-analysis generalizations that students learn do help them as they spell many words, but it is a mistake to assume that linguistic generalizations will always help in spelling. For example, learning that the letter "c" has the sound of /s/ when followed by "i," "e," or "y" helps students pronounce the word "city" when they see it in print. But this information is less helpful when learners try to spell the word "city" because they cannot see the word. They only hear the /s/ sound. If they believe that the /s/ sound is always made by "c" when it is followed by "i," the learners are in trouble when attempting to spell "sit" or "sister." In order to be helpful for the purposes of spelling, a linguistic generalization must supply information students can use as they hear or think of words, not just as they see them in print.

Despite these problems, it is possible to identify some spelling patterns that apply to a large number of words. By including qualifying words, such as "usually," "sometimes," or "often," these patterns may be used for the grouping of words that students are learning to spell. Some sounds occur with so many varied spellings that attempting to apply generalized statements to them is more confusing than helpful. It is, though, useful to help students compare and contrast different spellings like these so that they can be alert to the need for careful visual discrimination when these sounds are spelled.

Individualized Spelling Instruction

The concept of individualized spelling instruction has been confusing because no common agreement exists on what constitutes an individualized approach to spelling. To some teachers it is little more than incidental learning where students find for themselves words they feel should be learned, but where they receive no formal spelling instruction. To others, individualized spelling instruction is defined much differently. These teachers attempt to place students at the level of learning for which they are prepared and teach them according to proven methods of instruction, while permitting them to move at their own pace.

Some writers, e.g., Hall (30), Eisman (20), and Dunne (16), have published articles that point out the need for individualized instruction, but there are relatively few studies reported in which individualized methods have actually been used. Among the few reported, Noall and Ceravalo (55) found individualized instruction beneficial to children in some aspects of spelling. A programmed course in spelling developed at Weston, Massachusetts (18), has been reported to benefit children in learning how to spell. Allred, Read, and Baird (1) reported a two-year longitudinal study that compared an individualized approach with a whole-class approach in which functional and formal spelling comparisons were made by grade level and by reading levels within grades. For the intermediate grades, findings indicated that the individualized approach produced results as good as or better in all instances. Similar results were found in formal instruction in the primary grades with the exception of low ability students in the third grade. (1) Masoner (49) compared the individualized approach referred to above with a different whole-class approach and found significant differences favoring the individualized approach in both formal and functional spelling at the sixth-grade level. Crosland (12) discovered no significant differences between an individualized approach and a whole-class approach in a study she conducted at the eighth-grade level.

Approaches to individualized spelling instruction that have generated much interest from time to time and that may hold promise for the future are those which use magnetic tape recorders, tachistoscopes, or computers. The use of magnetic tape recorders and tachistoscopes has been studied for several years with some positive, but not always conclusive, results. Recently, information has become available concerning computer-assisted instruction (CAI).

Durrell and others (17) found that CAI was an effective and efficient means of teaching spelling, sensitive to individual needs, effective for weaker students, and useful for remedial work. Bubba and Thorhallsson (5) in a "spelling clues" project tested the ability of a CAI approach to instruct students in spelling with preliminary indications that the program was successful. Although Demshock and Riedesel (14) found no significant differences between the CAI approach they used and the one with which it was compared, they did conclude that CAI could individualize spelling instruction.

There are many different ways to use the computer. Some

should prove successful while others may fail, but it does appear likely that this aid has some value in specialized situations. One concern, however, is cost. CAI will need to become affordable before its widespread acceptance or use can be expected.

In spite of what we know about the wide range of spelling ability within the classrooms, far too little is being done to individualize spelling instruction. Differences among students are recognized, and lip service is paid to the need for meeting these differences but the existence of these differences is denied by the way we teach. Frequently, no provision is made to adjust the spelling curriculum. In some instances token attempts to individualize are made by the addition of sometimes inappropriate words to the regular list for the advanced student, or by subtracting words from the list for the less capable. But far too infrequently are students placed at their own levels and permitted to move at their own paces, which is the essence of individualized spelling instruction.

Spelling is one of the less difficult areas of the curriculum to individualize. Even though many individual words are difficult to spell, the consequences of missing a particular word or step are not as serious as they are in some other curriculum areas. For this reason, spelling is one of the safest areas of instruction for a teacher to begin to individualize. Furthermore, sufficient information and materials now exist that make it possible for teachers to begin a program of individualized spelling instruction.

Time Allotments for Spelling

One of the findings of spelling research that can be pertinent to teachers is the one relating to the amount of time that can be used most efficiently. A study reported by Jarvis (45) indicated that children do not benefit from extended periods of study in spelling. He found that children in the intermediate grades benefited as much from a 20-minute spelling period each day as they did from a 40-minute period. The bulk of earlier findings indicates that children do not benefit from more than 75 minutes per week, and there is evidence that this amount of time could be reduced. (39) The reasons for these findings are related to interest and motivation. The task of learning to spell resembles that of reading the dictionary: the subject might be of interest, but the plot changes too

often. It is more efficient to involve students in a highly motivating spelling experience for a short period of time than it is to involve them in successive, lengthy daily experiences of study and practice. Wise use of this information can save valuable time for other activities and result in comparable learning and better student attitudes toward spelling.

SPELLING DEFICIENCY

Causes of the wide range of spelling ability within any class are many and varied. The problems of identifying reasons for existing differences, their nature, and how to overcome them are more taxing than those of locating differences. Causes of some of the most striking differences are physical in nature. Quite logically, the scholastic progress of a child with extreme health problems will suffer. An illustration of this is a teacher who pointed to a fourth-grade child and commented that according to test results the child had "grown three years" academically during the past three months. In response to the question, "My word, what did you do?" the teacher indicated that the child had taken an eye examination and had been fitted with glasses. Here was a child who had been considered mentally retarded but who needed only to see better. Physical impairments contribute much to the lack of achievement of some children. However, other factors play a greater role for the majority of students, for "low spelling achievement is much more often due to faulty training in spelling and other language skills than it is to physical defect." (24:191)

Frequent Causes of Spelling Deficiency

Lists of frequent causes of spelling deficiency have been prepared through the years. Two of these lists seem particularly comprehensive. The first, organized by Hollingsworth and referred to by Fitzgerald (24:193), includes:

1. sensory defects either of the eye or of the ear
2. the quality of general intelligence
3. faulty auditory perception
4. faulty visual perception
5. sheer failure to remember
6. lack of knowledge of meaning
7. motor awkwardness and uncoordination

8. lapses
9. transfer of habits previously acquired
10. individual idiosyncrasies
11. temperamental traits.

Horn's (38:1347–1349) list includes:

1. poor study habits
2. lack of sufficient reading
3. writing slowly or illegibly
4. faulty speech habits
5. lack of interest (no other factors impede learning in spelling as much as does a lack of interest or the presence of undesirable attitudes)
6. home conditions
7. physical characteristics
8. personality traits
9. specialized disabilities
10. lack of good sound perception and discrimination
11. low intelligence even though high intelligence does not guarantee superior spelling ability
12. poor visual memory.

Horn indicates that with the exception of lack of interest, the two most important contributions to a student's inability to spell are lack of auditory imagery and lack of visual imagery—important clues for teachers of spelling.

Overcoming Spelling Deficiencies

The most important contributions to good spelling are high pupil interest and the development of efficient auditory and visual imagery. Efforts should be made in these areas, in attempting to overcome spelling deficiencies within the classroom.

High Pupil Interest

The "why" of high pupil interest in spelling instruction is obvious, but the "how" is not so clear-cut. Initial interest and motivation on the part of students often dies or is killed. Teachers must face reality concerning this condition, take justified responsibility, and seek diligently to discover causes and cures. Why is it that a pupil, highly motivated in a given subject, completely loses interest over a period of time? Answers must be found to this question and appropriate action taken.

Needed actions concerning these problems are rooted in research findings discussed earlier. Some clues come from the amount of time most effectively spent in spelling instruction. The nature of the subject is different from many others: in spelling there is no plot, and a short, highly motivating experience is needed. There is also evidence that appropriate placement and individual progress are needed. Students will not remain motivated if the task is either too easy or too hard or if progress is not evident. Ineffective methods and approaches foster boredom and little progress.

Though the major thrust toward keeping students motivated must be in connection with routine spelling activities, sources of help in this area are educationally sound games and puzzles. It is possible to create and organize games in such a way as to apply research findings productively and enjoyably. Teachers can either develop games of their own or locate commercially produced games and puzzles that accomplish the desired results. Their proper use can add variety to the ways of studying spelling and can help maintain students' interest that also extends to the formal study of spelling. In addition, teachers have found that through games students not only learn content but develop the ability to work together. (34:6)

Cautions should be taken in the selection and use of games and puzzles. Some games merely occupy time and have little educational value. However, when enjoyment is mixed with meaningful content, both learning and interest are enhanced.

Teachers are encouraged to apply effective methodology and to engage in activities that help build motivation; otherwise, they will not maintain or develop that single most important factor in a child's learning to spell—pupil interest.

Auditory Imagery

There are two major dimensions to be considered when the sense of hearing is related to spelling ability—auditory acuity and auditory discrimination. On the surface it would appear that both would play vital roles in the spelling process. While one would expect this to be so, it is not the case. Differences in auditory acuity do not differentiate good and poor spellers; whereas, sound perception and discrimination are significantly related to spelling ability. (38)

One reason auditory discrimination has proven valuable to

children is that the English language is approximately 85 percent phonic. (56) In spite of the irregularities of English spelling, if a child's auditory discrimination is good, this alone will account for the correct spelling of many English words. Training in this area can be of great value. Fortunate is the person who develops this ability.

In the case of auditory acuity, it is not so much how well one hears, but merely if the person is able to identify the spelling task. Once this task is known, other processes spring into action and hearing acuity no longer plays a significant role.

Of additional interest is the related research of Strag and Richmond (67:453), who found that "most of the research on auditory discrimination and socio-economic status indicates that deprived children are less able to discriminate the sounds used in speech than their more advantaged peers." Clark and Richards (8) found that among economically advantaged and disadvantaged pre-school children a deficiency in auditory discrimination was found in the economically disadvantaged child.

Findings of this nature give rise to the need to learn more about the kind of instruction and testing required by those who are placed into categories such as culturally deprived, economically disadvantaged, bilingual, etc. There have been studies (9:41–48) (26) (52) (53) (64) which show that many deprived, and bilingual, children score on a level comparable with their middle class age-mates when tested on the language that they actually speak as opposed to Standard American English.

Reasons for this condition may be partially explained by Louise Matteoni and Harold B. Allen (50:15):

> References to this group often have employed such terms as *culturally disadvantaged, culturally deprived, deprived, underprivileged,* and *socially alienated,* with the strong implication that *deprivation, disadvantage,* and the like are synonymous with *defect.* But the increased understanding drawn upon in this discussion has introduced a new terminology without such an implication. It is now recognized that those who are "culturally different" are not necessarily culturally "deprived" or inferior.

There is little evidence available concerning the relative performance of these children in the area of spelling; however, the illustration cited below in the related area of reading is revealing (50:15):

> The child who reads *mouth* as "mouf" or even reads *ask* as the historical "aks" is actually doing a fine job of reading. He recognizes the visual symbol of the word he knows orally, and the teacher who tampers with his pronunciation at this time is quite likely to create for the child a serious psychological hazard that will retard future reading progress.

It would seem that the condition also exists in the area of spelling, but perhaps not as much. The number of irregularities in English spelling causes all students the frustration of having to spell many words whose written symbols do not correspond directly with the spoken sounds. The degree to which the problem may be greater for the culturally different has not yet been determined, and is a fertile field for further research.

Visual Imagery

One of the main problems in spelling is the inability of students to spell words that violate phonic principles. Investigation indicates that the major process by which a child learns words not spelled phonically is by visualizing those words as they have been seen or as they resemble other words. Hunt and others (44:342) identified "the ability to look at a word and to produce it later" as one of the four factors, besides general intelligence, that affect the ability to spell English words. Because this skill is so important, educators should help students develop it. Unfortunately, this is not a simple task. However, some suggestions have been made for its development, and a few methods have been devised for its improvement.

Durrell and Sullivan (17) suggested there probably should be increased emphasis placed on the association of auditory and visual patterns that make up words in order that pupils may generalize in trying to spell words for which they have no clear, specific images. Toohy (70) suggested that drawing and typing improve children's ability to look carefully and thus improve visual memory. Radaker (59) tested a method in which subjects were to visualize words as though they were projected on a large outdoor theater screen. Through this method students tried to stabilize the image and retain it as long as possible. It was found that developing imagery in this way is successful in improving spelling performance over long periods of time.

A method of teaching slow-learning and remedial pupils how to spell was developed by Grace Fernald (21). This approach relies

heavily on touch and motion and results in improved visual imagery for those who use it.

In order to develop visual memory, Wheeler and Wheeler (74) have suggested that teachers should teach students to diagram or draw a picture of what they have read. The suggested steps are: (1) help children build associations around the mental image of a word or printed idea that you want remembered, (2) require the students to recall visualizing the word or idea they are trying to remember, (3) increase perceptual spans for thought units, phrase, sentence, and paragraph reading to locate key words and ideas, etc., (4) build the student's sight vocabulary, (5) help students develop the ability to visualize or personalize what they read or study.

More recent literature reveals continued interest in ways of using visual memory methods to improve spelling ability. Hendrickson (35:40) says that although students have not learned many of the basic visual abilities, many children do have an adequate skill of visualization. As children learn to visualize, they learn to observe, and recognizing a misspelled word becomes a process of matching the word visualized. Ciotti and Krairtz (7) developed a program for spelling that includes kinesthetic, auditory, and visual involvement. Emphasis is placed upon total word recall, understanding meaning, and the use of words in contextual sentences. Kuhn and Schroeder (47) found that the use of oral and visual discrimination techniques in the corrected-test procedure resulted in significantly higher spelling scores in fourth and sixth grades for both boys and girls, and for both high and low achievers.

Cohen (11), in his studies of visual perception and disadvantaged children, found that: (1) urban disadvantaged children scored poorly on tests of visual perception, and (2) visual perception and intelligence are highly correlated. He (10) also found that disadvantaged students have less general information than advantaged children and that there is a higher evidence of severe visual perceptual dysfunctions among disadvantaged children.

Plessas and Dison (58) found that when phonic clues are held reasonably constant, good readers who spell well discriminate better visually than do good readers who have low achievement in spelling. Also, since visual discrimination depends upon some form of word memory or imagery, children who are more able in reading than in spelling perhaps rely too strongly on phonics than on visual study in learning to spell certain new words.

It would be unsound to leave the discussion of auditory and visual imagery without recognizing that it is extremely rare, as in the case of the deaf or blind, that auditory and visual imagery function independently of each other. Day and Wedell (13:38–9) investigated the commonly held assumption that visual and auditory memory are important component functions in children's spelling. In their words:

> It is clearly impossible to state that spelling, for example, depends on a given level of specific cognitive functioning, except possibly a minimal level, but from the present study it could be argued that each of the groups achieved its level of spelling from a different combination of functions. The extent to which a deficient function might handicap an individual child in spelling could well depend on the levels of his other relevant skills. It is hardly surprising, therefore, that studies relating visual and auditory memory to spelling have often produced inconsistent findings.

The eight study steps, referred to earlier on page 24, help students develop and use visual imagery along with auditory and kinesthetic senses. Undoubtedly this is one reason why conscientious application of the study steps has proven so successful through the years.

In summary, a relatively small number of methods have been used by teachers to help develop visual imagery. A few methods have been researched and found helpful, but because of the nature of the task and the differences among students, most teachers have not been helped. The provision of study steps that help develop visual memory is one exception, however, that has helped teachers do a better job. The author recognizes that teachers might not be able to identify the imagery deficiencies and capabilities of each individual within a classroom. But identifying them should remain an area of concern, and spelling instruction must provide what best suits the individual student.

FUTURE NEEDS AND DEVELOPMENTS

Questions that might be asked regarding spelling are: What does the future hold for spelling instruction? What areas of spelling need to be researched? No absolute or comprehensive answers are available, but we are reasonably sure that school districts, schools, and individual classroom teachers will continue to use published spelling programs for several years to come. Along with these programs there will be increased attempts to use supplemental materials to meet the needs of individual students.

Continued attention should be given to (1) spelling reform, (2) application of past research, (3) application of proven study steps, (4) keeping interest high, and (5) individualized instruction. New research could be conducted in the areas of (1) individualized instruction, (2) visual imagery, (3) spelling and linguistic generalizations, and (4) machine teaching, including the use of computer-assisted instruction.

Spelling Reform

Although there are many strengths in the English language as it now exists, spelling is not one of them, and there is need for continued reform. Scholarly studies should be conducted and support given to the valid changes that are recommended for simplifying English spelling. Of all the possible protests in our society today, one dealing with simplified spelling should rank among the most important.

Heilman echoes the sincere feelings of many conscientious educators (33:112):

> The many alternative approaches available for cracking the code might be interpreted as evidence that mastering the English system of writing poses a formidable challenge. There is no question that English spelling reform is long overdue. The present practice of attempting to teach *all* American youth to read and spell English is the foremost example of conspicuous consumption of a nation's resources since the building of the pyramids. Unfortunately for many children, the belief is still widely held that our economy can still afford this cruel waste.
>
> Without doubt, the most patriotic and educationally sound endeavor that reading teachers, and their teachers, could follow would be to set a date a few years in the future and decline henceforth to teach another child to read traditional English writing. The brief delay suggested would provide time for a federal commission to devise a sweeping and thorough spelling reform of English.

Application of Past Research

Since the chief problem of learning present English spelling appears to be a more critical and universal application of the evidence now available, educators are encouraged to become well-acquainted with research related to the teaching of spelling and learn how to apply it. They should exert continued efforts to ensure utilization of valid findings within each classroom.

Application of Proven Study Steps

Steps have been found that are very helpful in learning to spell words, and, though many people memorize the steps, few actually learn to apply them. It is recommended that publishers organize their materials such that students actually apply proven study steps during spelling study. It is also recommended that teachers help students apply valid study steps in the study of other unknown words.

Keeping Interest High

Since no other factor is as important in spelling study as high interest, it is critical that a teacher keep this constantly in mind. Activities should be used that keep students looking forward to the spelling period. Important to the success of these activities is

teacher attitude. If the teacher looks forward to spelling study, it is likely the children will also. When the teacher fails to enjoy the experience, it is time to analyze what is taking place and make necessary adjustments. This can be done in a variety of ways. A change in the time of day for spelling study or a change in the way students and teachers work together is helpful. The introduction of activities such as studying homonyms, working puzzles, or playing useful games are stimulating, but most important of all is the approach taken toward comprehensive spelling study. Students need to discover its importance and be involved in meaningful, stimulating activities that develop competencies which improve both spelling and self-concepts.

Individualized Spelling Instruction

A trend that is becoming more prevalent throughout the nation is that of not only recognizing the existence of individual differences but also of doing something about them through individualized spelling instruction. This trend is expected to continue, and different methods should be devised that will help meet the needs of individual students. This suggests the need to use existing individualized spelling programs or to develop new ones. Once new programs and methods are developed, they should be thoroughly researched and their value established before they are used extensively.

Visual Imagery

Visual imagery is one of the most important contributions to good spelling, yet little concrete help is available to teachers and children concerning its development. Serious efforts should be expended in developing and researching programs and methods for improving visual imagery.

Spelling and Linguistic Generalizations

Much has been said in recent years concerning the existence and importance of spelling and linguistic generalizations in spelling instruction. A review of the literature reveals that much more has been done in the identification of these generalizations than in the actual testing of contributions to spelling growth. It is recommended that careful and comprehensive research be conducted to

determine their value. Through research, not just conjecture, answers should be found to the following questions:

- Which generalizations contribute most to spelling growth?
- How many can be learned for maximum benefit?
- When should they be introduced?
- How should they be organized?
- How should they be taught?
- What learning activities should be used in conjunction with the generalizations in order to produce growth?
- Can a program built around the generalizations be more successful than a program that doesn't use the generalizations?
- Which, if any, of the generalizations can be used effectively to supplement existing programs?

The use of spelling and linguistic generalizations has had great impact on spelling programs during the past decade. Unfortunately, too few of the published materials are based upon valid research findings relating to spelling growth. A primary reason for this is that too little research is available. Because of the current influence of spelling and linguistic generalizations on spelling programs, immediate answers need to be found in this area more than in any other.

Machine and Computer-Assisted Instruction

Machine aids, especially the tape recorder and computer-assisted teaching, have made important inroads in several instructional areas during the past decade. Their contributions to spelling could be valuable. They have the capacity to store information in unique and potentially effective ways. Through their use, students can be motivated, and instruction can be individualized. Approaches using these devices might prove successful with all or certain elements of the student population. Continued research on their contributions is needed.

Culturally Different

Research findings have shown that the culturally different in general do rather poorly academically. There are now indications that many of these children can do as well as their middle class counterparts when tested on the language they actually speak. How

children learn and who learns the most and under what conditions children learn the best are the focus of controversy among educators and involve very complex issues. One thing is clear, however; more good research is needed before answers to the questions can be given. Methods of instruction directly related to the culturally different are ripe for exploration.

Future Developments

Needed reform of English spelling will be slow in coming, and the need for people to learn the present system will remain.

Many innovations will probably appear in the future as funds and efforts become committed to their development. While people should be encouraged to take advantage of what is presently available, they should remain open to new methods and procedures that will aid both the teacher and the learner. One caution is that the value of these new methods should be established before they are accepted wholesale. It is important that research be conducted over sufficiently long periods of time to determine whether or not its methods are valid and its contributions to the field worthwhile. Because the consequences of our actions are so far reaching, they must not be left to chance.

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